



GP 2815/8
PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Eduard A. Cartier, et al.

Examiner: Lourdes C. Cruz

Serial No: 09/413,462

Art Unit: 2815

Filed: October 6, 1999

Docket: YOR919990358US1(12906)

For: SILICATE GATE DIELECTRIC

Dated: March 27, 2001

Assistant Commissioner for Patents
United States Patent and Trademark Office
Washington, D.C. 20231

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AMENDMENT AND RESPONSE

Sir:

In response to the Office Action dated February 1, 2001, applicants submit the following amendments and remarks for entry of record in the above-identified patent application.

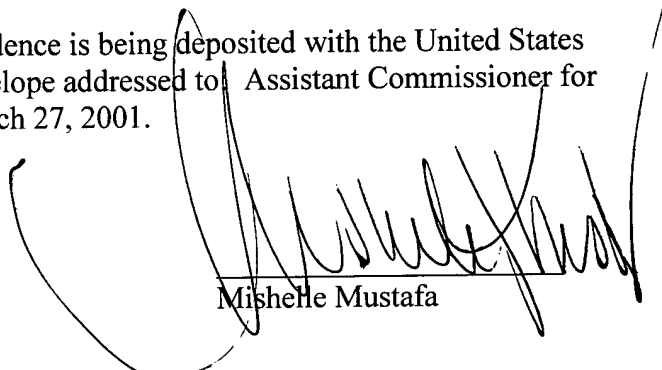
IN THE CLAIMS:

Please amend Claim 34 to read as follows:

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231, on March 27, 2001.

Dated: March 27, 2001


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34. (Amended) A capacitor comprising at least one metal silicate sandwiched between the same or different electrode materials, (wherein said at least one metal silicate is obtained by forming a metal oxide layer on a silicon-containing material and heating said metal oxide layer in the presence of an oxidizing agent under conditions so as to convert said metal oxide layer into said metal silicate while simultaneously oxidizing a portion of the silicon-containing material underlying the metal silicate.)

REMARKS

Favorable reconsideration and allowance of the claims of the present application is respectfully requested.

Before addressing the grounds of rejection raised in the present Office Action, applicants hereby affirm the provisional election, without traverse, to prosecute Claims 21-34 in the present application, which was made by the undersigned on February 9, 2001.

In the present Office Action, Claim 34 stands rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite. Responsive thereto, applicants have amended Claim 34 to include the subject matter of non-elected Claim 1. That is, amended Claim 34 includes the process steps that are recited at Page 3, lines 19-26 of the specification of the instant application.

Since the above amendment to Claim 34 does not introduce any new matter into the application, entry thereof is respectfully requested. Moreover, applicants respectfully submit that the amendment to Claim 34 obviates the §112, second paragraph rejection; therefore the instant §112 second paragraph rejection can and should be withdrawn.

As required by 37 C.F.R. §1.121, applicants have attached a marked-up version of the changes made to the claims by the current amendment. The marked-up attachment is captioned "Version With Markings Showing Changes Made".

In addition to the aforementioned formal ground of rejection, Claims 21-23, 28, 29, 30, 32 and 33 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,418,179 to Hotta ("Hotta"). Claims 25-27 stand rejected under 35 U.S.C. §103 as allegedly unpatentable over Hotta. Additionally, Claims 24 and 31 stand rejected under 35 U.S.C. §103 as allegedly unpatentable over the combination of Hotta and U.S. Patent No. 5,306,950 to Fujikawa, et al. ("Fujikawa, et al."). Applicants respectfully traverse each of the aforementioned §§102 and 103 rejections in view of the amendments made above and the remarks to follow hereinbelow.

It is axiomatic that anticipation under §102 requires that the prior art reference disclose each and every element of the claim to which it is applied. In re King, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). Thus, there must be no differences between the subject matter of the claim and the disclosure of the applied prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: The absence from the applied reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants submit that the claims of the present application are not anticipated by the disclosure of Hotta since the applied prior art reference does not disclose applicants' claimed [structure that includes at least a metal silicate formed on a silicon oxide layer. As is known to

those skilled in the art, silicates are insulating compounds made of silicon oxide combined with a metal oxide, e.g., $\text{La}_2\text{Si}_2\text{O}_7$. }

In contrast thereto, Hotta provides a multilayered structure wherein an upper film comprised of a refractory metal silicide is deposited on a lower film comprised of polysilicon. A list of refractory metal silicides such as WSi_2 , TiSi_2 , CoSi_2 , NiSi_2 , etc. is found at Col. 6, lines 54-59 of Hotta. {Applicants respectfully submit that silicides are conductive compounds made of silicon combined with a refractory metal. }

Applicants further submit that silicates are chemical different than silicides because of the presence of oxygen atoms in silicates which are not present in silicides. Moreover, silicates have different physical properties than silicides (insulating vs. conductive). In view of these differences, Hotta does not anticipate the claims of the present invention.

The foregoing remarks clearly indicate that the applied reference does not teach each and every aspect of the claimed invention, as required by King and Kloster Speedsteel; therefore the claims of the present application are not anticipated by the disclosure Hotta. Applicants thus respectfully submit that the instant §102(b) rejection has been obviated; therefore the anticipation rejection can and should be withdrawn.

Insofar as the §103 rejections are concerned, applicants submit that the applied prior art references of Hotta alone, or Hotta in combination with Fujikawa, et al. do not teach or suggest applicants' claimed structure which includes at least a metal silicate formed on a silicon oxide layer.

The primary reference spurring the §103 rejections, i.e., Hotta, is deficient for the same reasons as mentioned above concerning the §102(b) rejection; therefore those remarks are incorporated herein by reference. To reiterate: Hotta does not teach or suggest the

claimed semiconductor structure which comprises, among other elements, a metal silicate. In contrast, Hotta discloses metal silicides which are employed in the principal reference as a conductive element. Applicants find no indication of employing metal silicates in Hotta and there is no motivation therein that would suggest the presence of the same in the disclosed semiconductor structure.

Insofar as Fujikawa, et al. is concerned, that applied secondary reference does not alleviate the above-mentioned defect in Hotta since the applied secondary reference also discloses the use of metal silicides, not metal silicates as presently claimed.

The various §103 rejections also fail because there is no motivation in the applied references which suggest modifying the structures disclosed in either applied prior art reference to arrive at applicants' claimed structure which includes a metal silicate. That is, applicants find no motivation in the art of record that would lead one to employ a metal silicate in the prior art structures. "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Vaeck, 947 F.2d, 488, 493, 20 USPQ 2d. 1438, 1442 (Fed.Cir. 1991).

The rejections under 35 U.S.C. §103 have been obviated; therefore reconsideration and withdrawal thereof is respectfully requested.



Thus, in view of the foregoing amendments and remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

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